APPARATUS, METHOD, SYSTEM AND EXECUTABLE MODULE FOR CONFIGURATION AND OPERATION OF ADAPTIVE INTEGRATED CIRCUITRY HAVING FIXED, APPLICATION SPECIFIC COMPUTATIONAL ELEMENTS

Abstract of the Disclosure

The present invention concerns configuration of a new category of integrated circuitry for adaptive or reconfigurable computing. The various embodiments provide an executable information module for an adaptive computing engine (ACE) integrated circuit to provide an operating mode. The preferred executable information modules include configuration information interleaved with operand data, and may also include routing and power control information. The preferred ACE IC includes a plurality of heterogeneous computational elements coupled to an interconnection network. The plurality of heterogeneous computational elements include corresponding computational elements having fixed and differing architectures, such as fixed architectures for different functions such as memory, addition, multiplication, complex multiplication, subtraction, configuration, reconfiguration, control, input, output, and field programmability. In response to configuration information, the interconnection network is operative in real-time to configure and reconfigure the plurality of heterogeneous computational elements for a plurality of different functional modes, including linear algorithmic operations, non-linear algorithmic operations, finite state machine operations, memory operations, and bit-level manipulations.